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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,546	03/30/2001	Jin-Yuan Lee	MEG2000-012	4705
28112	7590	09/08/2005	EXAMINER	
GEORGE O. SAILE & ASSOCIATES 28 DAVIS AVENUE POUGHKEEPSIE, NY 12603			OWENS, DOUGLAS W	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/821,546	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> Douglas W. Owens	<b>Art Unit</b> 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 June 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-13, 15, 17, 19-32 and 34-145 is/are pending in the application.  
     4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☒ Claim(s) 52-58, 60-62, 102-107, 109-111, 117-121, 123-126 is/are allowed.
- 6) ☒ Claim(s) 11-13, 15, 17, 19, 20, 23-25, 42, 48-50, 63, 65, 66, 68, 70, 71, 127, 132-141 and 143-145 is/are rejected.
- 7) ☒ Claim(s) 43-47, 51, 64, 67, 69, 73, 74, 128 and 131 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Continuation of Disposition of Claims: Claims withdrawn from consideration are 21,22,26-32,34-41,59,72,75-101,108,112-116,122 and 130.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of the species of Figs. 2a – 2j in the reply filed on June 23, 2005 is acknowledged. The traversal is on the ground(s) that the search must include both species of the invention. This is not found persuasive because this assertion is merely speculative, and no evidence of such has been provided.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11 – 13, 15, 17, 19, 20, 23 – 25, 134 – 141 and 143 – 145 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 11 and 134 require that the substrate be separated. The scope of the claim is vague, since it is not known if the substrate is separated into portions, like the wafer is separated into chips, or if the substrate is separated away from the at least one of the dies. Claims 70 and 134 recite similar limitations.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 63, 65, 66, 68, 70, 71, 127, 129, 132 and 133 are rejected under 35

U.S.C. 102(e) as being anticipated by US Patent No. 6,165,885 to Gaynes et al.

Regarding claim 63, Gaynes et al. teach a method of forming an electronic package (Fig. 1) comprising the steps of:

joining at least a die and a substrate (102, 114), wherein multiple openings (116) are formed in the substrate and expose said die; and

depositing a conductive material into the openings (118), wherein the conductive material is suited for connecting said die to an external circuitry.

Regarding claim 65, Gaynes et al. teach a method, wherein the conductive material comprises tin-lead alloy or tin-silver alloy (Col. 15, lines 45 – 51).

Regarding claim 66, Gaynes et al. teach a method, wherein the external circuitry comprises a next level of packaging.

Regarding claim 68, Gaynes et al. teach a method, wherein the die comprises multiple pads (104) exposed by the openings in the substrate and exposed by multiple openings in a passivation layer (108) formed over an active surface of the die.

Regarding claim 70, Gaynes et al. teach a method, further comprising separating the substrate from the die (126).

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Regarding claims 71 and 129, Gaynes et al. teach a method, after joining the die to the substrate, further comprising forming a polymer layer encapsulating the die (Col. 19, lines 14 – 25).

Regarding claim 127, Gaynes et al. teach a method of forming an electronic package comprising the steps of:

providing a die comprising multiple pads (104) and a passivation layer (106), multiple openings formed in the passivation layer (108) and exposing the pads; and

joining the die and a substrate, multiple openings formed in the substrate and exposing the pads (114, 116).

Regarding claim 132, Gaynes et al. teach a method, after joining said die to the substrate, further comprising depositing a conductive material into the openings (118).

Regarding claim 133, Gaynes et al. teach a method, wherein the conductive material comprises multiple solder balls (1509).

6. Claims 42 and 50 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,312,972 to Blackshear.

Regarding claim 42, Blackshear teach a method of forming an electronic package comprising the steps of:

depositing an adhesive over a substrate (Col. 2, lines 26 – 28); and

after deposition the adhesive layer, joining a die (11) and the substrate (17) using the adhesive layer, wherein multiple openings are formed in the substrate and expose the die.

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Regarding claim 50, Blackshear teach a method, wherein after joining the die and substrate, conductive material (21, 22, 23) is deposited into the openings.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackshear.

Regarding claim 48, Blackshear is silent with respect to the openings being formed before or after joining the die and substrate. It has been held that the selection of any order of process steps is *prima facie* obvious in the absence of new or unexpected results. See *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959) (Prior art reference disclosing a process of making a laminated sheet wherein a base sheet is first coated with a metallic film and thereafter impregnated with a thermosetting material was held to render *prima facie* obvious claims directed to a process of making a laminated sheet by reversing the order of the prior art process steps.). See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946).

Regarding claim 49, Blackshear does not teach a substrate comprising BT. BT is a well known material that is well-suited for the intended use. The selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness

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determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

***Allowable Subject Matter***

9. Claims 44 – 47, 51, 64, 67, 69, 73, 74, 128 and 131 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 52 – 58, 60 – 62, 102 – 107, 109 – 111, 117 – 121 and 123 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach a method including the step of “joining said die and a substrate, wherein multiple openings are formed in said substrate and expose said UBM layer”.

***Response to Arguments***

12. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within



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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven H. Loke can be reached on 571-272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas W Owens  
Examiner  
Art Unit 2811